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JSS 8305-5

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**MINISTRY OF DEFENCE  
JOINT SERVICES SPECIFICATION**

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CLOTH COTTON CLOSELY WOVEN  
VARIETIES A,B,C 91 cm WIDE

{DS Cat No. 8305-000 076, 000 199 to}  
{000 212 and 000 382 to 000 386}

Issued by :

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0. FOREWORD

- 0.1 This specification has been prepared by the Stores Standardisation Sub Committee, on the authority of Standardisation Committee, Ministry of Defence.
- 0.2 This specification is approved by the Ministry of Defence and is mandatory for use by the Defence Services. It supercedes CT & C Schedule No. TC-IIA/6 and Specs.No. IND/TC/0115(e) and IND/TC/0116(f).
- 0.3 This JSS would be used to guide design, manufacture, inspection and procurement of the item.
- 0.4 Enquiries regarding this specification in relation to any contractual conditions should be addressed to the Inspection Authority named in the tender or contract, other enquiries will be referred to the Directorate of Standardisation, Ministry of Defence, New Delhi - 110 011.
- 0.5 Copies of this JSS can be obtained on payment from:
- (a) Directorate of Standardisation  
Ministry of Defence,  
New Delhi - 110 011.
- or concerned Inspection Authority of Ministry of Defence Viz:
- (b) Chief Inspectorate of Tex. & Clothing  
P.B. No.294, Kanpur-208 004.

1. SCOPE

1.1 This specification covers the requirements of undermentioned three varieties of Closely Woven Fabrics intended for use by the Defence Services for the fabrication of Snow Clothing items and various Arctic tents to be used at high altitudes.

Variety

Use

- |     |   |
|-----|---|
| 'A' | Bags Sleeping and Arctic Tent small.  |
| 'B' | Suits Parka, Short Great Coats, Tent Arctic Medium Mk. II, Tent Arctic Medium Mk II (Medical) |
| 'C' | Caps WP Snow.   |

2. RELATED SPECIFICATIONS

2.1 Reference is made in this specification to:

- (i) IS: 323 - Rectified spirit.
- (ii) IS: 392 - Method for determining water absorption and penetration of fabrics using Bundesmann type apparatus.
- (iii) IS:718 - Carbon tetrachloride
- (iv) IS:764 - Method for determination of colour fastness of textile materials to washing, test 3
- (v) IS:1070 - Water, distilled quality.
- (vi) IS:1383 - Method for determination of scouring loss in grey and finished cotton textile materials.

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- (vii) IS:1390 - Methods for determination of pH value of aqueous extracts of textile materials.
- (viii) IS:1954 - Methods for determination of length and width of fabrics.
- (ix) IS:1963 - Method for determination of threads per decimetre in woven fabrics.
- (x) IS:1964 - Methods for determination of weight/sq.metre and weight per linear metre of fabrics.
- (xi) IS:1969 - Methods for determination of breaking load and elongation at break of woven textile fabrics.
- (xii) IS:2454 - Methods for determination of colour fastness of textile materials to artificial light (Xenon lamp).
- (xiii) IS:3919 - Methods for sampling cotton fabrics for determination of physical characteristics.
- (xiv) IS:4905 - Methods for random sampling.
- (xv) IS:5463 - Methods for sampling of cotton fabrics for chemical test.
- (xvi) IS:7941 - Methods for determining of water repellancy of fabrics for cone test.

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2.2 All specifications/drawings referred to in this specification for any tender or contract shall mean the edition current on the date of such tender or contract.

2.3 Indian Standard specifications are issued by the Indian Standards Institution and are obtainable on payment from the Sales Section, Indian Standards Institution, Manak Bhavan, 9 Bahadur Shah Marg, New Delhi-110 002 or their regional offices.

3. STANDARD PATTERN

3.1 The standard pattern, held by the Chief Inspectorate of Textiles & Clothing, Kanpur shall constitute the standard as regards any particulars or properties not noted/defined in this specification.

4. MATERIAL

4.1 The fabric shall be all cotton.

5. MANUFACTURE

5.1 The cloth shall be woven in 2/2 Matt Weave conforming to the constructional details given in clause 6.

5.2 Cotton yarn used in the manufacture of the fabric shall be of a quality that will ensure the compliance of the fabric with the requirements of this standard. It shall be free from defects such as neps, slubs and knots. The approx. count of warp and weft

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yarns used in the manufacture of the cloth, is given below for the guidance of the manufacturer

<u>Variety</u>	<u>Linear density (Approx)</u>	
	<u>WARP</u>	<u>WEFT</u>
A	6 tex x 2	7.5 tex x 2
B	9.8 tex x 2	13.4 tex x 2
C	16.4 tex x 2	19.7 tex x 2

- 5.3 The dual shade effect shall be obtained by printing with a solid olivegreen shade on one side of the bleached fabric by roller/screen printing with dye paste of suitable viscosity so that the olive green pigments are not percolated to the other side.
- 5.4 The water repellent finish shall then be imparted by treating the fabric with a suitable composition adding not more than 6 per cent on the mass of the unproofed fabric. The water repellent fabric shall be rendered resistant to microbial attack by incorporating a suitable fungicide.

6. DIMENSIONS, MASS & OTHER DETAILS

- 6.1 The cloth shall conform to the following particulars:-



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Variety	Width	Length	Mass	Threads/cm		Breaking load	
	(min)		per			(min) (10 cm x	'N'
	cm	m	sq/m	Ends	Picks	20 cm grip	length)
			g			Warp	Weft
A	91	36 or as ordered	170	87	43	1960	1250
B	91	-do-	235	67	35	2230	1515
C	91	-do-	310	51	30	2310	1695
Tolerance	-	-	+5% -2.5%	+5% -2.5%	+5% -2.5%	-	-

Method of Test IS:1954 IS: 1964 IS:1963 IS: 1969

6.2 The following tolerances shall be permissible in the breaking load of the fabric when supplied in different finishes :

<u>Finish</u>	<u>Tolerance in Breaking Load</u>
White (Bleached) & Dual shade, per cent	= -5
OG Water-repellent, per cent	= -10
White (Bleached) WR & Dual shade WR, per cent	= -15

WORKMANSHIP AND FINISH

- 7.1 The cloth shall be free from spinning, weaving and other processing defects.
- 7.2 The white fabrics shall have a full bleached finish.
- 7.3 The olive-green and dual shade fabric shall be of the approved shade, free from stains, streaks, patches and specks.
- 7.4 The water repellent fabric shall be pliable and free from tackiness and objectionable odours.
- 7.5 The fabric shall be free from loading materials or from substances liable to cause subsequent tendering.
- 7.6 In appearance, shade and finish and in all other respects not noted/defined in this specification the cloth shall conform to the corresponding standard pattern.

8. MARKING

- 8.1 Each piece, prior to being offered for inspection shall legibly be marked by the supplier with his name, initials or recognised trade mark, the year of manufacture, brief nomenclature, DS Cat. number of the store and length of the piece alongwith the number of flag contained in the piece.

9. QUALITY

- 9.1 Examination of sample taken from any portion of consignment shall show that the fabric conforms to the requirements of clause 6 above and those

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given below when tested as per methods mentioned against each:-

Test	Requirements	Methods (refer to)
(a) Shrinkage, per cent, Max	2.5	Appendix 'A'
(b) pH value of Aqueous Extract	6.5 to 8.5	IS: 1390 (Cold Method)
(c) Loss on Scouring, per cent, Max (not applicable for WR varieties)	2	IS:1383 (Mild Method 'B' Diastase Test)
(d) Dyed and Dyed WR Varieties Fastness of dye		
(i) to Light	Rating 5 or better or Class V or above as per classification adopted by the SDC Bradford, Yorkshire	IS:2454 or when determined by high intensity Carbon Arc (Atlas Fadeometer)
(ii) to Washing	Rating 4 or better	IS:764

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Test	Requirements	Methods (refer to)
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(e) Water Repellent  
Varieties

- (i) Bundesmann Water-repellency test
- (a) There shall be no penetration of water through the fabric
- (b) The water absorption shall not exceed 60%
- IS:392

- (ii) Cone Test
- There shall be no leakage through the fabric
- IS: 7941

- (iii) Water repellent finish content, per cent, Max
- 6
- Appendix 'B'

9.2 Unless stated otherwise, analytical grade chemicals and distilled water conforming to IS:1070 shall be used in testing operations.

10. PRE-INSPECTION OF STORES/CONSIGNMENT

- 10.1 Manufacturer/contractor must satisfy themselves that the stores are in accordance with the terms of the contract and fully conform to the

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required specification by carrying out a thorough pre-inspection of each lot before actually tendering the same for inspection to the Inspecting Officer nominated under terms of the contract. A declaration by the contractor that necessary pre-inspection has been carried out on the stores tendered will be submitted along with the challan. The declaration will also indicate the method followed in carrying out pre-inspection showing the features checked/ tested and will have the test certificate attached to the challan/declaration.

- 10.2 If the Inspection Officer finds that pre-inspection of the consignment as required above has not been carried out, the consignment is liable for rejection.

11. SAMPLING

- 11.1 For determining the conformity in respect of physical characteristics and chemical tests the scale of sampling and criteria for conformity as given in IS: 3919 and 5463 respectively shall be followed.

/IS: 3919 and

- 11.2 The table 2 of specification No. IS: 3919 and 5463 specified the number of bales to be chosen from the lot and the deliveries for inspection are offered in the form of pieces of varying lengths to facilitate visual examination of the material. To overcome this difficulty, the following drill and calculations prior to

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conducting the actual sampling shall be followed:

(a) Method of forming the bales

Step 1 - The lot offered in pieces/thans shall be stocked with full-length pieces and short length pieces, separately duly pre-inspected and serial number as 1,2,3..... and so on.

Step 2 - Based on the mass per linear metre of fabric and total mass of the bale permitted, the number of pieces/thans per bale shall be calculated.

Step 3 - Based on step (2) the total number of bales in the lot shall be calculated, presuming that those pieces/thans are to be packed in bales in serial number for example:

Total No. of pieces	- 400 Nos
Total No. of pieces per bale	- 40 Nos
Total No. of bales	- 10 Nos

Than Nos

1 to 40

41 to 80

81 to 120

361 to 400

Bale No

I

II

III

X

(b) Sampling procedure

- Step - 1 - Based on the bale numbers (piece No marked) as derived in step No(3) above. No. of bales shall be selected as per method given in the IS:3919 and IS:5463.
- Step 2 - The No. of pieces/thans from the bale as mentioned in step(1) above shall be determined according to the No. of tests require as method laid down in IS specifications mentioned above.
- Step 3 - The desired No. of pieces/thans shall be picked out from each of the sampled bale with the help of random No. Table (IS:4905).
- Step 4 - The above number of pieces/thans derived from the lot shall constitute the sample size and pieces of suitable length as sample unit shall be cut from the selected pieces/thans for lab. tests. The random number of pieces so selected for taking out the sample shall be indicated in the F/Note by the sampling officer.

12. INSPECTION

- 12.1 On examination, material found not conforming to the specification requirements shall be rejected.

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13. WARRANTY

13.1 The store supplied shall be deemed to bear a warranty of the contractor against defective material, workmanship and performance for a period of six months from the date of receipt of the stores at consignee's depot. If during the period the stores supplied are found by the consignee to be so defective, the same shall be replaced immediately with serviceable stores by the contractor at site free of any charges or cost.

14. PACKAGING

14.1 Packing and marking of the packages shall be in accordance with the schedule to be furnished by the Inspection Authority, where considered necessary.

15. DEFENCE STORES CATALOGUE NUMBERS

	Variety No. A Cloth	Variety No. B Cloth	Variety No. C-Cloth
	Cotton C.W	Cotton CW	Cotton 310 g
	170g, 91 cm	237 g, 91 cm	91 cm Wide
	<u>Wide</u>	<u>Wide</u>	<u>Wide</u>
	<u>DS Cat No</u>	<u>DS Cat No.</u>	<u>DS Cat No.</u>
White bleached	8305-000 205	8305-000 382	8305-000 211
White (Bld) WR	8305-000 206	8305-000 383	8305-000 076
Drab	8305-000 199		



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	Variety No. A Cloth Cotton CW 170 g, 91 cm Wide	Vareity No. 'B' Cloth cotton CW 237 g, 91 cm Wide	Variety No. 'C' cloth cotton CW 310 g, 91 Wide
	<u>DS Cat No</u>	<u>DS Cat No</u>	<u>DS Cat No.</u>
Dual Shade (OG/White)	8305-000 200	8305-000 384	8305-000 20
Dual Shade (OG/White)WR	8305-000 201	8305-000 385	8305-000 20
Olive Green	8305-000 202	-	8305-000 20
Olive Green WR	8305-000 203	8305-000 386	8305-000 21
Scoured	8305-000 204	-	8305-000 21

16. SUGGESTIONS FOR IMPROVEMENT

- 16.1 Any suggestion for improvement in this document may be forwarded to the Secretary, Stores Standardisation Sub-Committee, Directorate of Standardisation, Ministry of Defence, New Delhi - 110 011.

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APPENDIX 'A'

METHOD OF DETERMINATION OF SHRINKAGE  
OR ELONGATION

- A.1 A test piece not less than 60 x 60 cm shall be cut (not torn) from the sample. Accurate marking of not less than 50 cm shall be made in warp and weft directions and the test piece shall be immersed in 0.5% soap solution at room temperature for 24 hours, taken out and laid flat, allowed to dry on a flat and smooth surface in an atmosphere of  $65 \pm 2\%$  R.H. Measurements shall be taken on the glass plate before and after the treatment and the percentage of shrinkage/elongation calculated.

APPENDIX 'B'

METHOD OF DETERMINATION OF WATER REPELLENT  
FINISH CONTENT

- B-1 Apparatus
- B-1.1 Soxhlet Apparatus
- B-2 Reagents
- B-2.1 Carbon tetrachloride
- B-2.2 Rectified spirit
- B.3 Procedure
- B.3.1 Four pieces of material 75 x 75 mm shall be cut accurately from different places from a sample of the water-repellent material and conditioned for 24 hours under standard atmospheric condition. The conditioned pieces

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shall be weighed accurately and subjected to successive extraction in a Soxhlet apparatus with (a) Carbon tetrachloride for 3 hours, (b) Rectified spirit for 2 hours and (c) Water for 2 hours.

B.3.2 After the treatment, the material may contain pigments in the interslices of the fabric. To remove these, separate individual threads from the pieces, collect together and give light treatment with soap. Wash the threads thoroughly with water to remove last traces of soap. Dry and condition the test specimen in standard atmosphere.

Note: Other solvents may be used in case the the water-repellent material is not extracted by solvents (Carbon tetrachloride and rectified spirit).

B.4 Calculations:

Water-repellent content, 
$$\frac{M - M_1}{M_1} \times 100$$
 per cent

Where,

M = Initial mass in g, of the test specimens, and

$M_1$  = Mass in g, of test specimens after deproofing.

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